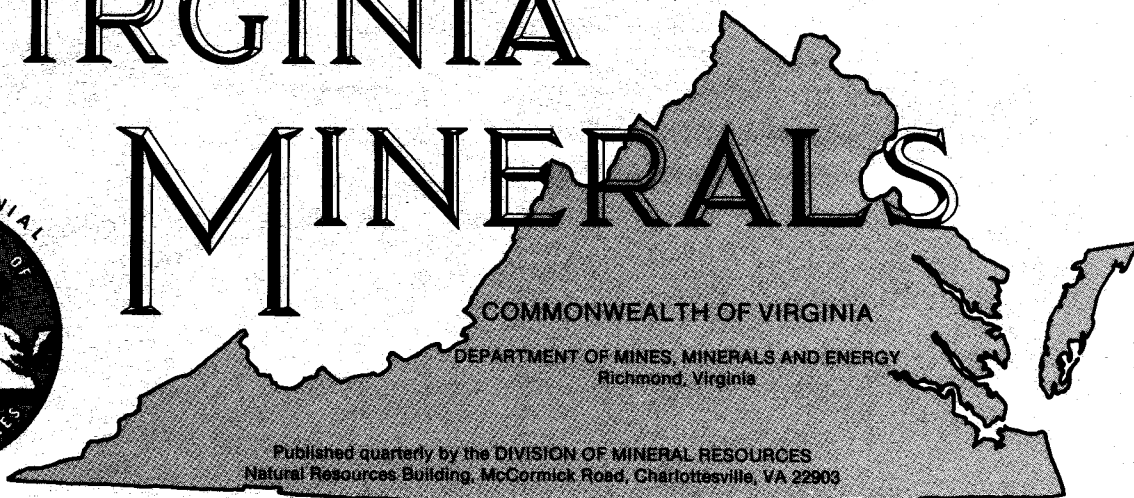
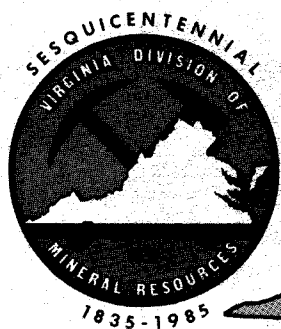


VIRGINIA

MINERALS



Vol. 38

May 1992

No. 2

MINERAL COLLECTING SITES IN VIRGINIA

D. Allen Penick, Jr. and Palmer C. Sweet

Seven mineral localities are operated on a fee basis for people interested in collecting in Virginia. All the listed localities were open to the public and information is correct as of April, 1992. For additional information on the localities, the individual operator should be contacted. The listing of localities mentioned in this report as collecting sites does not allow one to enter and collect without the permission of the owner or operator of the site. It should be stressed that before attempting to collect any material an individual should make himself known to the owner and obtain permission. **Entering private property without permission is punishable under trespass law.** Collectors planning to visit these localities should call beforehand to make sure someone will be available at the mine (except for Chestnut Ridge).

AMETHYST SITE - AMHERST COUNTY

The amethyst site is located 4.35 miles southeast of Amherst, Amherst County, about 1.0 mile off the south side of State Road 659 approximately 1.1 miles by road east of its intersection with State Road 604 in the Amherst 7.5-minute quadrangle (Figure 1). It is operated by Mrs. Charles R. Schaar of Amherst, Virginia, telephone (804) 946-5721. The collecting fee is \$5.00 per person per day.

Clear quartz and purple amethyst crystals and crystal clusters to three inches in length occur in a large bulldozed cut and in large piles of red to reddish-brown residual clays derived from underlying granites. Gem quality amethyst has been found at this site.

BERYL MINE - AMELIA COUNTY

The Beryl mine is located 3.8 miles east of Amelia, Amelia County, off the southwest side of State Road 628

approximately 1.65 miles by road southeast of its intersection with U.S. Highway 360 in the Amelia Court House 7.5-minute quadrangle (Figure 2). It is operated by D. R. Boyles of Amelia, Virginia, telephone (804) 561-2395. An admission fee of \$3.00 per person per day, any day of the week, is charged to collect from the site.

The Beryl mine was operated as the Dobbin (Thraves) prospect by the Seaboard and Southern Materials Company prior to World War II. The kaolinized pegmatite contains quartz and white to pale greenish-blue to clear beryl crystals. Rum-colored to clear mica is also present in the pit, which is about 50 feet long.

CHESTNUT RIDGE QUARTZ CRYSTAL LOCALITY - BATH COUNTY

The Chestnut Ridge site is located in Bath County on the eastern slope of Chestnut Ridge 0.35 off the northwest side of State Road 640 approximately 2.5 miles south of its intersection with State Road 629 (if travelling from north to south). Travelling from the south the location is on State Road 640 seven miles north of its intersection with State Highway 39. The property is in the Green Valley 7.5-minute quadrangle (Figure 3).

Access to the quartz crystal area on Chestnut Ridge is through private property owned by C. A. "Buzz" Loan. Mr. Loan charges \$0.50 per person to cross his property to reach the collecting area. In the event Mr. Loan is not home the fee can be left at his side door.

Quartz crystals are abundant on the ridge. They range from clear to smoky and occur as single crystals and in clusters along fractures and cavities in highly iron-oxide stained and fractured sandstone. Inclusions within the quartz crystals have been identified as sphalerite ("ruby zinc" variety). Some crystals are coated with a yellowish brown, red or

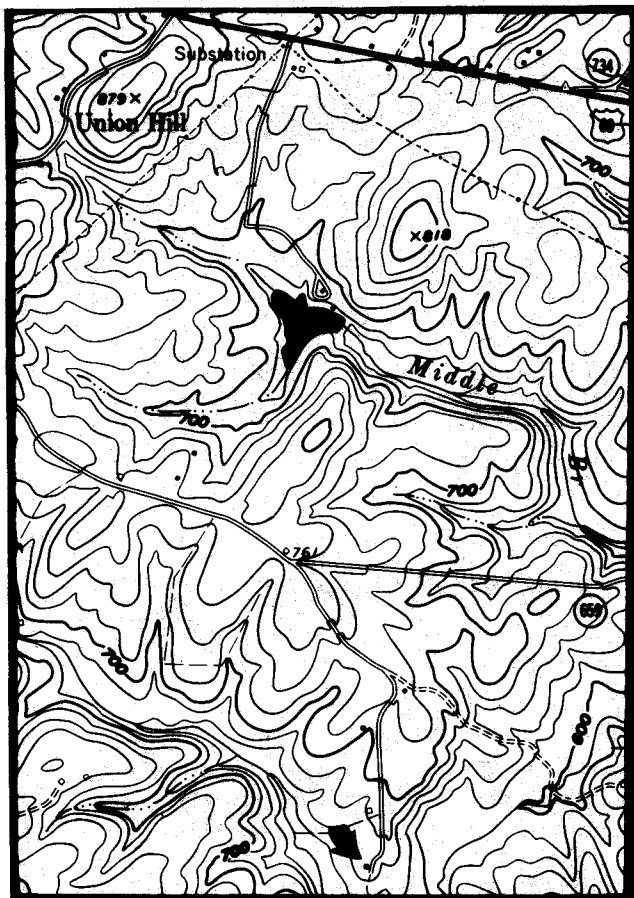


Figure 1. Portion of the topographic map of the Amherst 7.5-minute quadrangle; arrow is pointed toward the residence of the operator of the amethyst site; scale 1:24,000 (1" = 2000').

black iron-oxide crust. Crystals have been found up to three inches in length but the average size is about 0.5 inches. The smaller crystals tend to be clear and very well formed.

MOREFIELD MINE - AMELIA COUNTY

The Morefield mine is located 3.8 miles east of Amelia, Amelia County, about 0.4 mile off the northeast side of State Road 628 approximately 1.0 mile by road southeast of its intersection with U.S. Highway 360 in the Amelia Court House 7.5-minute quadrangle (Figure 2). It is operated by W. D. "Bill" Baltzley of Amelia, Virginia, telephone (804) 561-3399. A daily collecting fee of \$5.00 per person is charged to search for the minerals. For group rates, Mr. Baltzley should be contacted. A rock shop and museum are located at the mine. Camping facilities are available.

This pegmatite mine was first worked commercially in 1929 for mica, feldspar, gem amazonite (microcline), beryl, phenakite, and minerals of the tantalite-columbite series. Commercial mining operations ceased in 1948.

Other than the minerals previously listed, those commonly found in the dumps include albite (cleavelandite), topaz, spessartine garnet, and quartz. Masses of glassy quartz are present with partly kaolinized albite, perthite,

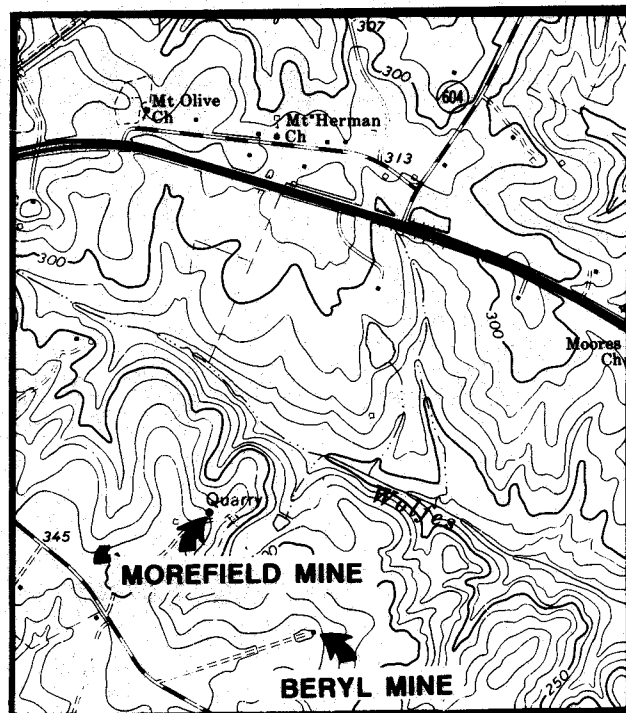


Figure 2. Portion of the topographic map of the Amelia Court House 7.5-minute quadrangle; arrows point toward the residences of the operators of the Morefield and Beryl mines; scale 1:24,000 (1" = 2000').

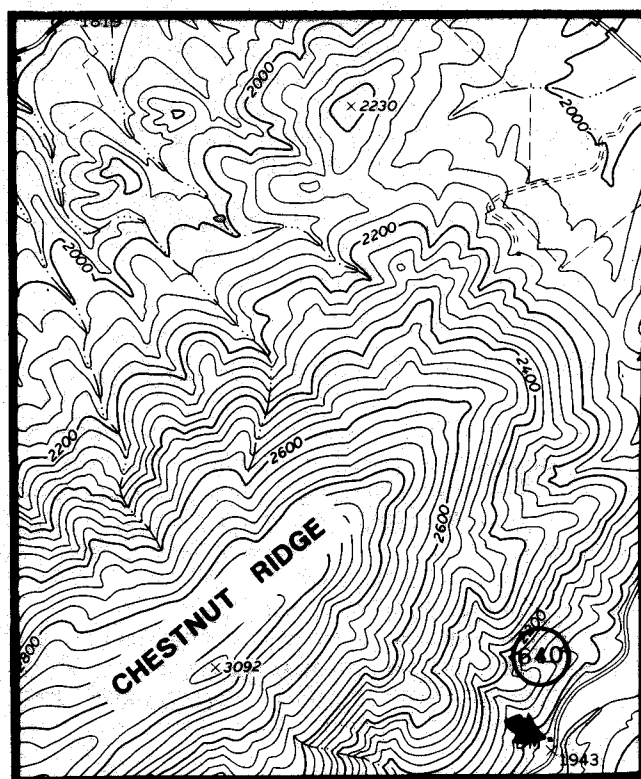


Figure 3. Portion of the topographic map of the Green Valley 7.5-minute quadrangle; arrow is pointed toward the residence of the owner of the parking area for the Chestnut Ridge quartz-crystal locality; scale 1:24,000 (1" = 2000').

muscovite, and biotite. Glass (1935) lists the following minerals from the complex part of the dike: beryl, cassiterite, columbite, fluorite, galena, manganotantalite, microlite, monazite, phenakite, pyrolusite, spessartine garnet, topaz, tourmaline, triplite, zinnwaldite, and zircon. Lemke and others (1952) have identified allanite, almandine-spessartine garnet, apatite, bertrandite, chalcopyrite, pyrite, and rutile. Over 40 published mineral species and varieties have been reported from this complex pegmatite.

RHODONITE PROSPECT - FLUVANNA COUNTY

This locality consists of several prospects on both sides of the South Fork of Cunningham Creek about 1.1 miles north of Kidds Store in the Palmyra 7.5-minute quadrangle. The property is operated by W. D. "Bill" Baltzley, Amelia Court House, Virginia, who also owns the Morefield mine. The telephone number is (804) 561-3399. Persons interested in collecting at this site should contact Mr. Baltzley and make an appointment to visit the property. The fee may vary depending on the number of collectors in the group.

In 1918, Dr. J. T. Cleveland prospected for manganese in the rhodonite-quartz veins at this locality; there is no record of any production. Smith, Milici, and Greenberg (1956) report minerals at the site include rhodonite, pyrolusite in massive quartz, jasper, specularite, chlorite, actinolite, magnetite, goethite and hematite. Workings consist of several shallow pits with scattered dump material.

The mineral of primary collecting interest is light to dark pink rhodonite which is generally associated with patches of black manganese oxide (probably pyrolusite). The sharp contrast in colors is very attractive when specimens are cut into cabochons and polished. The dark red jasper found on the property can also be cut into various decorative pieces suitable for jewelry. The rhodonite-quartz vein rock is extremely hard. Sledge hammers, heavy chisels and safety goggles are recommended.

RUTHERFORD MINE - AMELIA COUNTY

The famous Rutherford mine, which has produced some of Virginia's finest mineral and gem specimens, is now open for collecting three days a year over the Labor Day weekend. This is an annual affair held in conjunction with the Old Dominion Treasures Festival Gem and Mineral Show held in Amelia. The fee for collecting is \$5.00 per person per day. For further information call Paul Jones of Amelia, telephone (804) 561-3399.

The mine is located 0.95 miles north of Amelia about 0.6 miles off west-southwest side of State Road 607 approximately 0.3 miles north of its intersection with U.S. Highway 360 in the Amelia Court House 7.5-minute quadrangle (Figure 5).

Fine examples of microcline (var. amazonite), albite (var. cleavelandite), moonstone, mica, allanite, apatite, beryl, cassiterite, columbite, manganotantalite, microlite, monazite, phenakite, quartz, spessartine (garnet), topaz, and tourmaline can be found. Some of the world's finest spessartines

have been produced from the Rutherford mine and associated dumps. On September 1, 1991, an exceptionally large (2829 carats) spessartine garnet was found at the mine by Richard Seaver of Cumberland County, Virginia. This gem is currently on display at the Morefield mine museum in Amelia County.

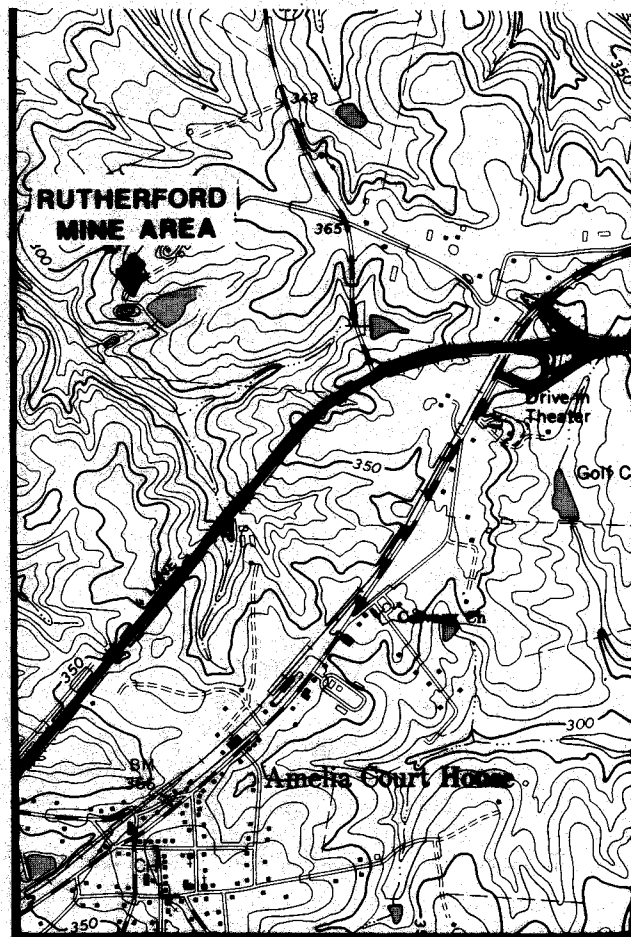


Figure 4. Portion of the topographic map of the Amelia Court House 7.5-minute quadrangle; arrow is pointed to the Rutherford mine area; scale 1:24,000 (1" = 2000').

STAUROLITE (FAIRY STONE) MINE - PATRICK COUNTY

The Stone Cross Mountain staurolite (Fairy Stone) mine is located about two miles north of Stuart, Patrick County on the east side of U.S. Highway 58 in the Stuart 7.5-minute quadrangle (Figure 5). The property is operated by Ernest Hopkins, P. O. Box 263, Stuart, Virginia 24171, telephone (703) 694-3348.

Entrance to the museum and exhibits is free. At the mine buckets of dirt are supplied for \$2.00 each. Staurolite crystals are found by sifting or washing the dirt. Most of the staurolite crystals are pseudomorphs (false forms) of sericite after staurolite. Both single and twinned crystals can be found. The most common twins are the 60° crosses while 90° crosses are

relatively rare. Hours are 9:00 A.M. to 5:00 P.M., Monday through Saturday, closed Sunday.

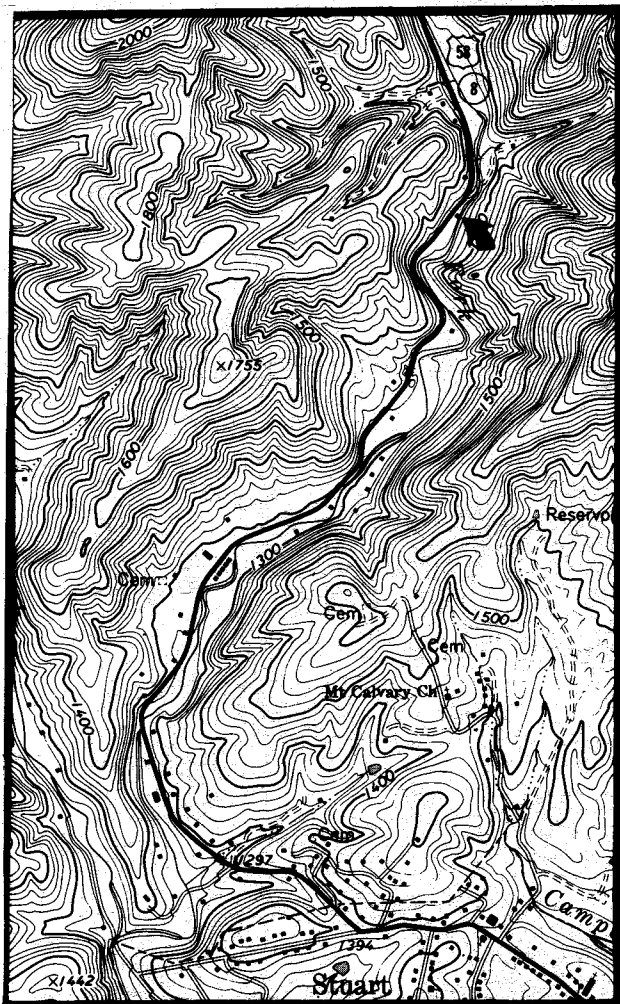


Figure 5. Portion of the topographic map of the Stuart 7.5-minute quadrangle; arrow is pointed to the staurolite museum operated by Hopkins Enterprises; scale 1:24,000 (1" = 2000').

FOR FURTHER STUDY

There are numerous collecting localities for rocks, minerals, and fossils, as well as sites of abandoned mines and prospects in Virginia. Many collecting localities are noted in "Appalachian Mineral and Gem Trails," by June C. Zeitner, "Eastern Gem Trails," by Floyd and Helga Oles, "Gems and Minerals of America," by J. E. Ransom, and "Minerals of Virginia," by R. V. Dietrich (available from the Division of Mineral Resources). A publication of the Virginia Division of Mineral Resources that provides summary information and the locations of many gold mines and prospects is Mineral Resources Publication 19, "Gold in Virginia," as well as Publication 27, "Metallic Mineralization in the Blue Ridge Province of Virginia." Additional and more specific information on some of the metallic mines can be found in the Division's quarterly "Virginia Minerals"; pertinent articles by volume and number are listed below:

- Vol. 17, No. 3 "Gold Mines and Prospects in Virginia"
- Vol. 19, No. 3 "Iron Sulfide Mines in Virginia"
- Vol. 20, No. 2 "Notes on Some Abandoned Copper, Lead, and Zinc Mines in the Piedmont of Virginia"
- Vol. 21, No. 1 "Road Log to Some Abandoned Gold Mines of the Gold-Pyrite Belt, Northeastern Virginia"
- Vol. 22, No. 1 "Silver in Virginia"
- Vol. 22, No. 3 "Abandoned Copper Mines and Prospects in the Virgilina District, Virginia"
- Vol. 23, No. 2 "Geochemical Reconnaissance for Gold in the Caledonia and Pendleton Quadrangles in the Piedmont of Central Virginia"
- Vol. 26, No. 3 "Processes of Gold Recovery in Virginia"
- Vol. 28, No. 4 "Gold Occurrences in Virginia, An Update"
- Vol. 29, No. 1 "Large Gem Topaz Crystal Discovery"
- Vol. 31, No. 4 "Additional Gold Mines, Prospects and Occurrences in Virginia"
- Vol. 32, No. 2 "Morefield Pegmatite Reopens - Virginia's Only Active Underground Gem Mine"
- Vol. 33, No. 1 "Virginia Mineral Locality Index"
- Vol. 38, No. 1 "Large Andalusite Crystals from Campbell County, Virginia"

REFERENCES CITED

- Glass, J. J., 1935, The pegmatite minerals from near Amelia, Virginia: *American Mineralogist*, v. 20, p. 741-768.
- Lemke, R. W., Jahns, R. H., and Griffiths, W. R., 1952, Mica deposits of the southeastern Piedmont; Pt. 2, Amelia district, Virginia: U.S. Geological Survey Professional Paper 248-B, p. 103-139.
- Smith, J. W., Milici, R. C., and Greenberg, S. S., 1964, Geology and mineral resources of Fluvanna County: Virginia Division of Mineral Resources Bulletin 79, 62 p.

MINERAL UPDATE

THE MINERAL ROCKBRIDGEITE

D. Allen Penick, Jr.

Rare phosphate minerals from Rockbridge County, Virginia, were recognized as early as 1875 (Campbell, 1881). During that year Colonel B.J. Jordan, one of the areas more distinguished iron masters, brought some examples of iron ore to the office of Professor J.L. Campbell of Washington and Lee University. The samples were taken from an iron mine located on South Mountain near Midvale and south of Vesuvius (hereafter known as the Midvale mine). Among this group of ore specimens was one sample very different from the typical reddish-brown limonite ores of the region. This sample was in the form of an irregular nodule which when broken exposed fresh surfaces of a radial fibrous structure with a rather dull silky luster and a dark greenish-brown (almost black) color. Where the surfaces of the nodule had been exposed to weathering the fibers were yellowish-brown similar to limonite while the original structure was preserved.

Dr. Campbell performed a series of tests in order to identify this unusual mineral. The mineral was determined to be dufrenite which is high in both iron and phosphorous with the chemical formula $\text{Fe}+3\text{Fe}4+3(\text{PO}_4)_3(\text{OH}) \cdot 2\text{H}_2\text{O}$. Dufrenite was named for Ours Pierre Armand Petit Duffrenoy (1792-1857), French mineralogist and geologist, Ecole des mines, Paris (Mitchell, 1979).

Because dufrenite has a high phosphorous content it became very unpopular with the operators of the Midvale mine. The "bed of dufrenite" at the mine was 10 to 12 inches in thickness and rested directly on the limonite ore. Colonel Jordan ordered the dufrenite to be kept separate from the iron ore. The high phosphoric acid content in dufrenite tends to make pig iron brittle so the term "cold short" (brittle when cool) came about. The term cold short was eventually shortened to "coldshire" by the miners (Barwood, 1989).

At the time dufrenite was identified by Professor Campbell it was considered a rare mineral. Consequently word spread that there was an abundant supply of the mineral piled around the mouth of the Midvale shaft (probably 2-3 tons according to Colonel Jordan). Much of this dufrenite was sent to various sections of the country to public institutions, private collectors, and mineral dealers. In 1881 this was considered the most remarkable deposit of this material yet discovered in the United States.

In the 1940s Professor Clifford Frondel of Harvard University became interested in this occurrence of dufrenite. He was aware that several different basic iron phosphates had been confused for some time under the name dufrenite. X-ray powder diffraction patterns afford the only certain means of distinguishing between the various dufrenite-like minerals. While the Midvale mine had been closed for many years there was still sufficient material remaining on the dumps for his study. About half of the specimens labelled dufrenite which Dr. Frondel examined were found to give an X-ray pattern entirely distinct from dufrenite proper. This meant that much of the material labelled dufrenite from the mine was in fact a different and unnamed mineral species.

In 1949 Dr. Frondel proposed the name rockbridgeite for this unnamed species because of its abundance at the Midvale mine in Rockbridge County (Frondel, 1949). Therefore the Midvale mine became the "type" locality for rockbridgeite. In his report X-ray diffraction patterns, optical and physical properties and other characterizing data are given for both dufrenite and rockbridgeite. The chemical formula for rockbridgeite is $(\text{Fe}+2, \text{Mn})\text{Fe}4+3(\text{PO}_4)_3(\text{OH})$. The chemical formulas for the two minerals show that manganese is almost always present in rockbridgeite and absent in dufrenite. There is very little difference in the physical properties of the two minerals and they are impossible to tell apart by visual inspection. At the time Dr. Frondel completed his report there were only nine proven localities for rockbridgeite worldwide. Rockbridgeite is the only mineral in Virginia named for a county in Virginia.

In addition to the Midvale mine, which has been reclaimed and no evidence of the mine remains, rockbridgeite occurs at the Dixie iron mine located 1.5 miles east of Vesuvius, Rockbridge County. Recent work by Kearns and Penick (1989) describes the mineralogy of this deposit. The Dixie mine, also known as the Coldshire mine, had problems

identical to the Midvale mine because of the high phosphorous content in the rockbridgeite.

Around the turn of the century the Dixie mine was the largest iron ore mine in Virginia. It extended for 1200 feet along the side of the mountain and in places was several hundred feet deep (Barwood and Zelanzy, 1982). In 1901 the mine closed due to unsafe mine conditions resulting in the death of a miner.

Abundant rockbridgeite can still be found on the dumps of the Dixie mine along with other rare phosphate minerals such as cacoxenite, dufrenite, kidwellite, and strengite (Figure 1). Rockbridgeite can be distinguished from the other minerals by its dark green to black fibrous appearance. To the writer's knowledge this is the only locality in Virginia where rockbridgeite and dufrenite can still be found. It has been discovered recently that rockbridgeite from the Dixie mine takes an excellent polish which resembles black jade. Polished samples can be used with sterling silver to make attractive jewelry (Figure 2).



Figure 1. Rockbridgeite with vugs containing strengite and kidwellite from the Dixie mine; specimen 3 inches in height (photograph by T.M. Gathright, II).

REFERENCES CITED

- Barwood, H.L., 1989, Dixie Mine (Letters to Editor): *Rocks and Minerals*, v. 64, n. 3, p. 183.
- Barwood, H.L., and Zelanzy, L.W., 1982, Phosphate minerals in the Vesuvius, Virginia area: *Rocks and Minerals*, v. 57, n. 1, p. 20-22.
- Campbell, J.L., 1881, The mineral dufrenite in Rockbridge County, Virginia: *The Virginias*, v. 2, p. 76.
- Frondel, Clifford, 1949, The dufrenite problem: *American Mineralogist*, v. 34, p. 513-540.
- Kearns, L.E., and Penick, D.A., Jr., 1989, The Dixie Mine, Rockbridge County, Virginia: *Rocks and Minerals*, v. 64, n. 1, p. 42-45.

Mitchell, R.S., 1979, *Mineral names: What do they mean?*: New York, Van Nostrand and Reinhold Co., 229 p.

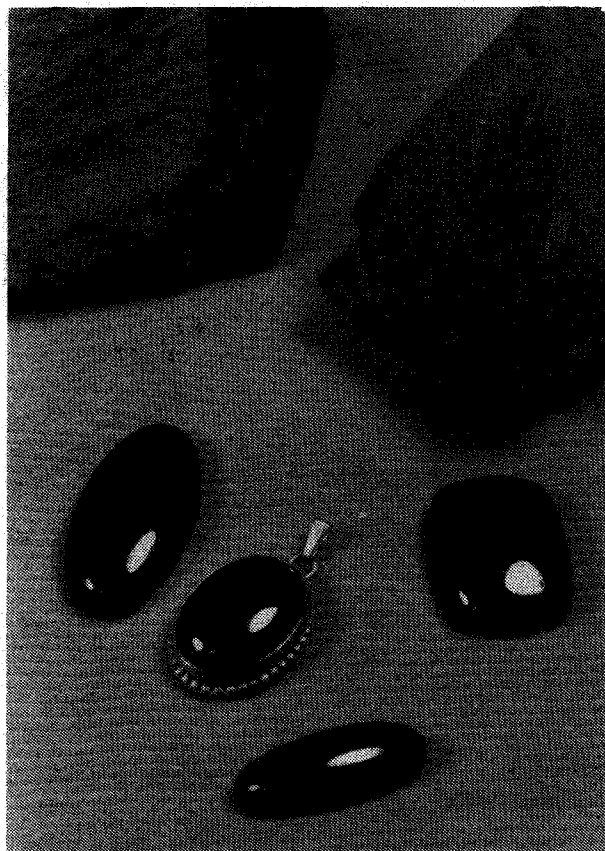


Figure 2. Rough and cut pieces of rockbridgeite from the Dixie mine, Rockbridge County; cabochon set in sterling silver; largest cabochon 1 inch (photograph by T.M. Gathright, II).

PYROMORPHITE FROM THE MOREFIELD MINE, AMELIA COUNTY, VIRGINIA

Lance E. Kearns
James Madison University

Pyromorphite, a lead phosphate chloride ($Pb_3(PO_4)_2Cl$), from the Morefield mine, Amelia County, Virginia, has been found and verified by X-ray diffraction and EDAX analysis. The specimen was found by Mr. David Thompson of Virginia Beach, Virginia, while collecting on the mine dumps during January, 1992. The specimen was submitted for identification by Bill and Joan Baltzley of the Powhatan Mining Company. According to Mr. Baltzley, the material in which the pyromorphite was found, came from the 45 foot level of the new shaft which is being sunk northeast of the primary shaft.

The specimen is a light green, secondary crust, composed of small, hexagonal, prismatic crystals (Figure 1). Associated minerals are quartz, cassiterite, and topaz. Although pyromorphite has been noted from the Rutherford #2 mine (personal communication R. Bland in Dietrich, 1990), this is the first reported occurrence from the Morefield mine. Pyromorphite is an alteration product of galena and locally occurring phosphate minerals such as triplite and/or apatite group minerals.

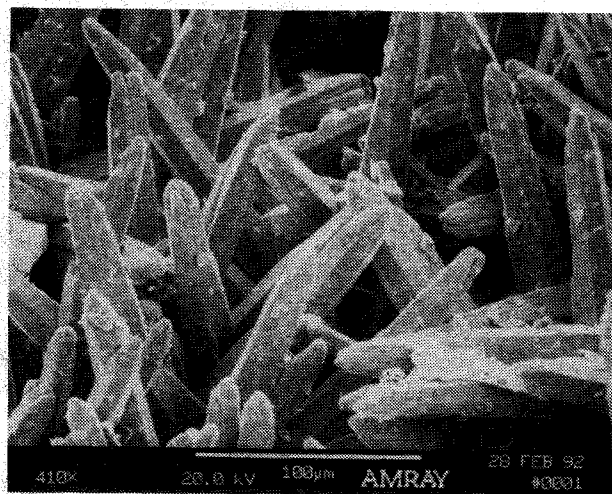


Figure 1. Pyromorphite crystal, Morefield mine, Amelia, Virginia.

REFERENCE CITED

Dietrich, R.V., 1990, *Minerals of Virginia - 1990*: Virginia Division of Mineral Resources, Charlottesville, Virginia, 474 p.

PROSOPITE FROM THE MOREFIELD MINE, AMELIA COUNTY, VIRGINIA

Lance E. Kearns
James Madison University

Prosopite, a calcium aluminum fluoride ($CaAl_2(F,OH)_2$), has recently been found at the Morefield mine in Amelia County. Specimens were submitted for analysis by Bill and Joan Baltzley of Powhatan Mining Company. Identification was made by X-ray analysis and further verified by EDS analysis. This is the first reported occurrence of prosopite from Virginia.

In July of 1991 a single mass of material was encountered in the ceiling of the 45 foot level approximately 125 feet from the main shaft. The entire mass was reported to be several feet across when initially discovered. Several buckets of material were removed from the mine for study, but a portion of the material remains in place in the mine.

Prosopite at the Morefield mine occurs as a powdery to granular mass ranging in color from white to a pale lavender-gray. It is closely admixed with topaz, kaolinite, and fluorite.

The propopite mass is believed to have formed from the alteration of the abundant topaz in this area of the mine. Kaolinite and fluorite are alteration products of the propopite. Other associated minerals are microcline (variety amazonite), albite (variety cleavelandite) and muscovite.

LARGE SPESSARTINE GARNET DISCOVERY

D. Allen Penick and William F. Giannini

An exceptionally large gem quality spessartine garnet was found in the dumps of the Rutherford #2 mine in Amelia County, Virginia on September 1, 1991. This beautiful specimen was found by Richard Seaver of Cumberland County during the Old Dominion Treasures Festival Gem and Mineral Show held annually in Amelia over the Labor Day weekend. The mine is only open to collectors three days a year in conjunction with this event.

The specimen was found in a recently excavated trench near the far southeastern edge of the Rutherford #2 dump (Figure 1). Mr. Seaver reported that he found the crystal while on his hands and knees feeling for minerals in the muddy-water filled trench. He named the crystal the Rutherford Lady. Shortly after its discovery the crystal was purchased by W.D. "Bill" Baltzley, operator of the Morefield mine, also in Amelia County. It is currently on display in the Morefield mine museum.

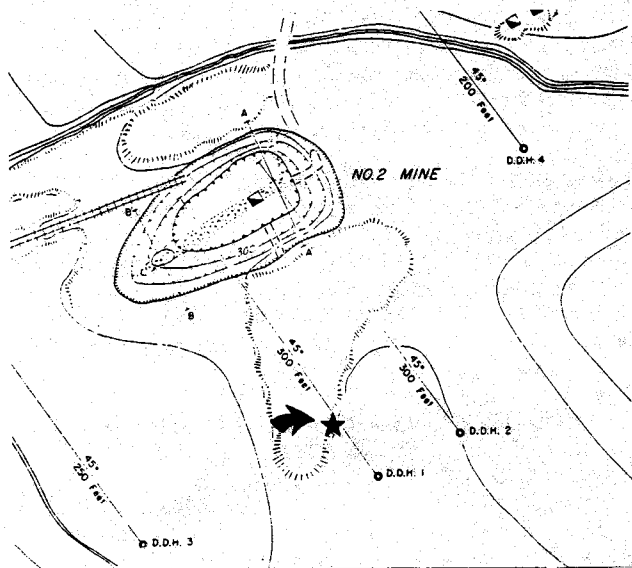


Figure 1. Map of the Rutherford mine area in Amelia County; approximate discovery site of 2829 carat spessartine indicated by star (map modified from Brown, 1962).

This crystal is probably the largest gem quality spessartine found in Virginia. The crystal is complete with the upper third being extremely gemmy and displaying an intense orange color typical of the finest spessartines (Figure 2). The lower two-thirds of the crystal is slightly darker and not quite as gemmy. The crystal weighs 2829 carats or 19.8 ounces. The dimensions are 3.5 x 3.25 x 3.3 inches. Although

the specimen was found loose it was probably originally associated with cleavelandite, a bladed feldspar mineral. Spessartine garnets, as well as other minerals, are commonly found between blades in cavities in the cleavelandite.



Figure 2. A close-up view of the 2829 carat spessartine garnet found September 1, 1991 at the Rutherford #2 mine; dimension 3.5 x 3.25 x 3.3 inches (photograph by D.A. Hubbard, Jr.).

In addition to the Rutherford Lady, two other outstanding spessartines from the Rutherford #2 should be mentioned. In September of 1972 an incomplete crystal weighting 6720 carats or 47.4 ounces was found by Sean Sweeney of Rockville, Maryland. This crystal was not entirely of gem quality but had several egg-sized clear areas which were suitable for cutting. The dimensions were 5 x 3 x 2.75 inches (Howard Freeland, personal communication). Another fine spessartine, weighing 1675 carats or 11.7 ounces found by John B. Nygaard, Cumberland, Virginia, Labor Day weekend, 1975, is presently in the geological collection of Virginia Polytechnic Institute and State University in Blacksburg (Susan Erickson, personal communication).

The Rutherford #2 mine is famous for producing fine spessartines. According to Sinkankas (1962) some of the world's finest specimens are found at this mine. Spessartine is a manganese aluminum silicate with the chemical formula $MnAl_2(SiO_3)_3$. The mineral is named for the Spessart Mountains in northwest Bavaria.

The Rutherford pegmatite mines (#1 and #2) are located 0.95 mile north of Amelia about 0.6 mile off the west-southwest side of State Road 609 approximately 0.3 mile north of its intersection with U.S. Highway 360 in the Amelia Court House 7.5-minute quadrangle (see Figure 4, page 3 in this issue).

Mining for mica at the Rutherford mine began in 1873 and continued intermittently until 1912 when the #2 mine was abandoned. Gem quality amazonite was produced from the #1 mine by the American Gem and Pearl Company of New York until 1932. The latest extensive mining was begun in 1957 by the Piedmont Mining Company under the direction of W.D. Baltzley. This operation was abandoned in 1960. The

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mine was then opened to mineral collectors on a fee basis by Crawford Keener.

In addition to spessartine and amazonite other important minerals from the mines include albite (variety cleavelandite), allanite, apatite, beryl, cassiterite, columbite, mangano-tantalite, mica, microlite, moonstone, monazite, phenakite, quartz, topaz, and tourmaline.

Further information on this complex pegmatite, in addition to that of Sinkankas, can be found in Glass (1935), Lemke and others (1952), and Pegau (1932).

REFERENCES CITED

Brown, W.R., 1962, Mica and feldspar deposits of Virginia: Virginia Division of Mineral Resources Mineral Resources Report 3, 195 p.

Glass, J.J., 1935, The pegmatite minerals from near Amelia, Virginia: American Mineralogist, v. 20, p. 741-768.

Lemke, R.W., Jahns, R.H., and Griffiths, W.R., 1952, Mica deposits of the southeast Piedmont, Part 2, Amelia District, Virginia: U.S. Geological Survey Professional Paper 248-B, p. 121-125.

Pegau, A.A., 1932, Pegmatite deposits of Virginia: Virginia Geological Survey Bulletin 33, 123 p.

Sinkankas, John, 1968, Classic Mineral Occurrences: Geology and mineralogy of the Rutherford pegmatite mines, Amelia, Virginia: The American Mineralogist, v. 53, p. 372-405.

REPRINT

Charles Butts' "GEOLOGIC MAP OF THE APPALACHIAN VALLEY IN VIRGINIA" reprinted in black and white.
Price \$6.00

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Virginia Minerals, Vol. 38, No. 2, May 1992

GEOLOGIC HAZARDS

Meetings on Geologic Hazards

If you are interested in meetings addressing geologic hazards and remediation techniques, there's plenty of options for you. Here is a short list:

7th INTERNATIONAL CONFERENCE ON EXPANSIVE SOILS will be held at the Plaza of the Americas Hotel in Dallas, Texas, August 3-5, 1992. A Pre-Conference Short Course: "Expansive Soils from a Non-Engineer's Viewpoint" and Post-Conference Study Tours include: Expansive Soil Problems and Practices in the Dallas-Fort Worth Area and Expansive Soil Problems and Practices in Texas. For more information, call (806) 745-0242.

ENGINEERING GEOLOGY INTO THE 21ST CENTURY is the theme of the 35th Annual Meeting of the Association of Engineering Geologists (AEG) at Hotel Queen Mary at Long Beach, California, October 2-9, 1992. Field trips include: The San Andreas Fault - Palm Springs to Palmdale; Geology of Catalina Island - an arid island; The Santa Monica Mountains - landslide problems; Malibu - landslides, coastal processes, and faulting, and more! For more information, call (301) 397-6338.

EARTHQUAKE HAZARD REDUCTION IN THE CENTRAL AND EASTERN UNITED STATES: A TIME FOR EXAMINATION AND ACTION is the theme of the 1993 National Earthquake Conference at the Peabody Hotel in Memphis, Tennessee, May 3-5, 1993. A Field Trip is planned to the New Madrid Seismic Zone. For more information, call (901) 345-0932.

THIRD INTERNATIONAL CONFERENCE ON CASE HISTORIES IN GEOTECHNICAL ENGINEERING will be held at the University of Missouri-Rolla in Rolla, Missouri, June 1-4, 1993. Case History Topics include: Foundations, Geotechnical Earthquake Engineering, Man-Made Vibrations, Forensic Engineering "Where Things Went Wrong", New Solutions to Traditional Geotechnical Problems, and more! For more information, call (314) 341-4489.